

C L A I M S

1. (Amended) A single-substrate heat-processing apparatus for a semiconductor processing system, the apparatus comprising;

5 a process container configured to accommodate a target substrate;

a support member configured to support the target substrate substantially in a horizontal state within the process container, while a bottom surface of the target substrate is exposed;

10 a heating gas supply section configured to generate a heating gas and supply the heating gas toward the bottom surface of the target substrate; and

a distribution member disposed within a flow passage of the heating gas supplied from the heating gas supply section, and configured to improve distribution uniformity of the heating gas onto the bottom surface of the target substrate, wherein the distribution member is disposed directly below the target substrate supported by the support member, and has a structure in which ventilation directions are substantially random to form a turbulent state of the heating gas.

2. (Deleted)

25 3. (Amended) The heat-processing apparatus according to claim 1, wherein the distribution member comprises a heat resistant porous plate consisting

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essentially of a

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material selected from the group consisting of foamed ceramics and porous sintered ceramics.

5 4. The heat-processing apparatus according to claim 3, wherein the porous plate consists essentially of foamed quartz.

 5. The heat-processing apparatus according to claim 1, wherein the support member comprises a support plate having an opening slightly smaller than the target substrate, and the target substrate is placed on the support plate during a heat process such that the
10 bottom surface is exposed from the opening.

 6. The heat-processing apparatus according to claim 5, wherein the support plate is disposed to divide an interior of the process container into a
15 process chamber on an upper side and a heating chamber on a lower side, and the target substrate is placed on the support plate during the heat process such that the opening is closed by the target substrate to prevent the heating gas from flowing from the heating chamber
20 into the process chamber.

 7. The heat-processing apparatus according to claim 6, further comprising an exhaust passage for exhausting the heating gas from the heating chamber.

 8. The heat-processing apparatus according to claim 7, wherein the exhaust passage comprises a
25 plurality of exhaust pipes disposed at intervals in a horizontal plane and penetrate the distribution member.

9. The heat-processing apparatus according to claim 7, further comprising a gas supply section configured to supply a gas into the process chamber, and the process chamber is set to have a positive pressure relative to the heating chamber during the heat process.

10. The heat-processing apparatus according to claim 6, further comprising an elevating member configured to support and move the target substrate up and down from the bottom surface, the elevating member being movable up and down through the opening.

11. The heat-processing apparatus according to claim 1, wherein the heating gas supply section comprises a heater configured to heat a gas to generate the heating gas, and a blower configured to send the gas to the heater.

12. (Amended) The heat-processing apparatus according to claim 11, wherein the heater is disposed directly below the distribution member.

13. (Amended) The heat-processing apparatus according to claim 11, wherein the heater comprises a heating portion covering substantially all over the exposed bottom surface of the target substrate.

14. The heat-processing apparatus according to claim 13, further comprising an auxiliary distribution member disposed between the blower and the heater, and configured to improve distribution uniformity of the

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gas supplied from the blower onto the heater.

15. (Amended) The heat-processing apparatus according to claim 1, further comprising a temperature detector configured to detect temperature of the heating gas near the bottom surface of the target substrate, and a heating gas control section configured to control the heating gas supply section in accordance with a detected value obtained by the temperature detector.

16. The heat-processing apparatus according to claim 1, further comprising a cooling gas supply section configured to supply a cooling gas onto the bottom surface of the target substrate, and a process control section configured to selectively supply the heating gas and the cooling gas.

17. The heat-processing apparatus according to claim 16, wherein the process control section is set to perform baking on a photo-resist film applied on a top surface of the target substrate.

18. (Added) A single-substrate heat-processing apparatus for a semiconductor processing system, the apparatus comprising;

a process container configured to accommodate a target substrate;

a support member configured to support the target substrate substantially in a horizontal state within the process container, while a bottom surface of the target substrate is exposed;

a heating gas supply section configured to generate a heating gas and supply the heating gas toward the bottom surface of the target substrate; and

5 a distribution member disposed within a flow passage of the heating gas supplied from the heating gas supply section, and configured to improve distribution uniformity of the heating gas onto the bottom surface of the target substrate,

10 wherein the support member comprises a support plate having an opening slightly smaller than the target substrate, and the target substrate is placed on the support plate during a heat process such that the bottom surface is exposed from the opening,

15 wherein the support plate is disposed to divide an interior of the process container into a process chamber on an upper side and a heating chamber on a lower side, and the target substrate is placed on the support plate during the heat process such that the opening is closed by the target substrate to prevent
20 the heating gas from flowing from the heating chamber into the process chamber, and

25 wherein the apparatus further comprises an exhaust passage for exhausting the heating gas from the heating chamber, and the exhaust passage comprises a plurality of exhaust pipes disposed at intervals in a horizontal plane and penetrate the distribution member.

19. (Added) The heat-processing apparatus

according to claim 18, wherein the distribution member is disposed directly below the target substrate supported by the support member, and has a structure in which ventilation directions are substantially random to form a turbulent state of the heating gas.

5 20. (Added) The heat-processing apparatus according to claim 19, wherein the distribution member comprises a heat resistant porous plate consisting essentially of a material selected from the group consisting of foamed ceramics and porous sintered ceramics.

 21. (Added) The heat-processing apparatus according to claim 20, wherein the porous plate consists essentially of foamed quartz.

15 22. (Added) The heat-processing apparatus according to claim 18, further comprising a gas supply section configured to supply a gas into the process chamber, and the process chamber is set to have a positive pressure relative to the heating chamber during the heat process.

20 23. (Added) The heat-processing apparatus according to claim 18, comprising a process control section set to perform baking on a photo-resist film applied on a top surface of the target substrate.